



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/820,114

04/08/2004

Yoshihiko Imanaka

042307

8372

38834

7590

04/30/2008

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER

DANG, TRUNG Q

ART UNIT

PAPER NUMBER

2892

MAIL DATE

DELIVERY MODE

04/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/820,114	Applicant(s) IMANAKA ET AL.	
	Examiner Trung Dang	Art Unit 2892	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13, 14, 16-19 and 47-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13, 14, 16-19 and 47-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/27/07, 1/28/08, 2/12/08</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 13-14, 16-19, and 47-49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Amended independent claims 13 and 47 introduce new limitation regarding **brittle** solid particle along with the remark that the present specification teaches the use of various ceramic materials, which are brittle. However, not all ceramic materials possess brittle property, i.e., there are some type of ceramic materials that are non-brittle. For example, the ceramic material of silicon carbide disclosed in the US 2002/0056946 has non-brittle property (see bottom of para. [0040]). Thus, the specification as originally filed fails to comply with the written description requirement as set forth in the first paragraph of 35 U.S.C. 112.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Renn (US 2003/0048314) in view of Hatono (US 7,175,921), all of record.

The rejection is maintained as of record and repeated herein.

Renn teaches a method of fabrication active and passive components on a circuit substrate (para. [0108]), which includes deposition of conductors, resistors, dielectrics (para.[0097]), inductor (Fig. 13 and related text), capacitor (para. [0108]), interconnects (para. [0139]), said method comprising a film forming step, said film forming step forming at least one of said dielectric film, said resistor film and said conductor film by ejecting dry aerosol of fine solid particle material with a carrier gas (para. [0130]). Note that, as disclosed in para. [0130], the droplets are dried by the sheath gas, resulting in dried particles deposited on the substrate, hence the disclosed aerosol is a **dry** aerosol as claimed. For the claimed limitation regarding the carrier gas, see para. [0055].

Renn differs from the claims in not disclosing that the dry aerosol is ejected into reduced pressure environment with a speed of 200-400 m/second as now recited in independent claims 50 and 51, even though Renn teaches particle velocities of about 100 m/second, and that greater speeds should be possible (bottom of para. [0131]).

In the same field of endeavor, Hatono teaches an aerosol deposition process in which a substrate is bombarded with a particle beam with a velocity within a range from 50-450 m/second (col. 10, lines 10-17), and the particle beam is ejected into a reduced pressure environment inside the deposition chamber (Fig. 1, and col. 12, lines 45-47).

Note that the pressure inside the aerosol generator 103 is higher than the reduced pressure in the deposition chamber 106 because nitrogen carrier is introduced into the aerosol generator 103 (col. 12, lines 25-27) to effectuate an ejection of particle beam from a high pressure environment to a low pressure environment.

It would have been obvious to one of ordinary skill in the art to perform the dry aerosol deposition process of Renn using particle speed and reduced pressure taught by Hatono because using known process parameters of related technique for depositing a film would have been within technical grasp of one skilled in the art so as to achieve predictable results of forming a high quality film (see Hatono, col. 10, lines 27-34).

Also noted that Renn's process is an impact activation process as claimed in claims 50 and 51 because the films are deposited by impaction of particles on the substrate.

5. Claims 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Renn taken with Hatono as applied to claims 50-51 above, and further in view of McMillan et al. (US 5,759,923 of record).

The combined process of Renn and Hatono teaches a dry aerosol process for making conductors, resistors, dielectrics, inductor, capacitor, interconnects an inductor as described above. The combination differs from the claim in not disclosing the step of making such elements using a resist pattern as a mask.

McMillan teaches an integrated circuit in which a pattern of capacitor dielectric layer 82 is formed by aerosol deposition (Fig. 8 and col. 14, lines 30-32). Although

McMillan does not show the use of a resist pattern as a mask in making the pattern dielectric layer 82, such application of a resist mask so as after blanket aerosol deposition of dielectric material 82, the resist mask is removed to leave a desired pattern for layer 82 (a technique known in the art as lift-off) would have been within the common knowledge of one of ordinary skill in the art.

For claim 54, see resin insulation film 80, lower electrode 81, and upper electrode 84.

Response to Arguments

6. Applicant's arguments filed 1/28/08 have been fully considered but they are not persuasive.

With respect to claims 50 and 51, applicants' argument relied on the limitation "brittle solid particle material", yet the claims do not recite such limitation therefore the argument is irrelevant.

Applicant's arguments with respect to claims 52-55 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is 571-272-1857. The examiner can normally be reached on Mon-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thao Le can be reached on 571-272-1708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 10/820,114

Page 7

Art Unit: 2892

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Trung Dang/
Primary Examiner, Art Unit 2892

4/28/08